台灣農業研究 (J. Taiwan Agric. Res.) 62(4):300–320 (2013)
DOI: 10.6156/JTAR/2013.06204.02

A List of Aspidiotinae (Hemiptera: Coccoidea: Diaspididae) Deposited at the Insect Collection of Taiwan Agricultural Research Institute

Shu-Pei Chen[1,*], Jen-Yu Wong[2], and Wen-Jen Wu[3,4]

Abstract

Chen, S. P., J. Y. Wong, and W. J. Wu. 2013. A list of Aspidiotinae (Hemiptera: Coccoidea: Diaspididae) Deposited at the Insect Collection of Taiwan Agricultural Research Institute. J. Taiwan Agric. Res. 62(4):300–320.

A list of 42 species in 23 genera of Aspidiotinae (Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae) with 391 slide mounted specimens deposited at Insect Collection of the Taiwan Agricultural Research Institute (TARI) is provided. The specimens were mainly collected during Japanese Colonial Period. Synonyms, host plants, distribution and photographs of slide-mounted specimen are also provided for each species.

Key words: Aspidiotinae (Diaspididae), Slide-mounted specimens, Taiwan Agricultural Research Institute (TARI).

INTRODUCTION

Scale insects (Hemiptera: Sternorrhyncha: Coccoidea) of Taiwan have been studied extensively by serveral western and Japanese entomologists such as Green, Ferris and Takahashi since 1923 (Tao 1978). Most of the slide-mounted specimens of Aspidiotinae (Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae) collected by Takahashi were deposited at the Insect Collection, Division of Applied Zoology, Taiwan Agricultural Research Institute (TARI). Among them, a great number of slide-mounted specimens were classified by Takahashi. However, a considerable number of species names used by Takahashi have been changed or synonymized with other names. In this study, taxonomic status of all slide-mounted specimens were revised based on the modern taxonomic studies.

MATERIALS AND METHODS

A total of 391 slide-mounted specimens were examined by a Leitz DMRB light microscope (Leica, Milton Keynes, U.K.) in this study. Distribution data of each species were compiled based on the information provided on the slide-mounted specimens deposited at the TARI Insect Collection. Photographs of slide-mounted specimens were taken for each species. According to Chu & Yamanaka (1973, 1974, 1975) and the Taiwan Geographic Name Information Systems (http://placesearch.moi.

Received: July 29, 2013; Accepted: September 18, 2013.
* Corresponding author, e-mail: spchen@tari.gov.tw
[1] Associate Research Fellow, Applied Zoology Division, Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.
[2] Field Technician, Applied Zoology Division, Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.
[3] Professor, Department of Entomology, National Taiwan University, Taipei, Taiwan, ROC.
[4] Director, Research Center for Plant Medicine, National Taiwan University, Taipei, Taiwan, ROC.

gov.tw/search/index.php), the old name and current name of collection locality records were included in the paper.

RESULTS

A total of 42 species (23 genera) of Aspidiotinae were identified. Among them, there were 15 species described by Takahashi, 2 species described by Kuwana. The following list provides comprehensive information on the nomenclature, synonymies, host plants, and distribution of each species. Table 1 is a check list of the old name and current name of collection locality records included in the paper (Chu & Yamanaka 1973, 1974, 1975).

***Abgrallaspis cyanophylli* (Signoret 1869)** (Fig. 1A) (Tao 1989; Wong *et al*. 1999)

Original spelling on label: *Aspidiotus cyanophylli* Signt. (8 slides)

Distribution: Taiwan (Heito: Heito, Kuraru;

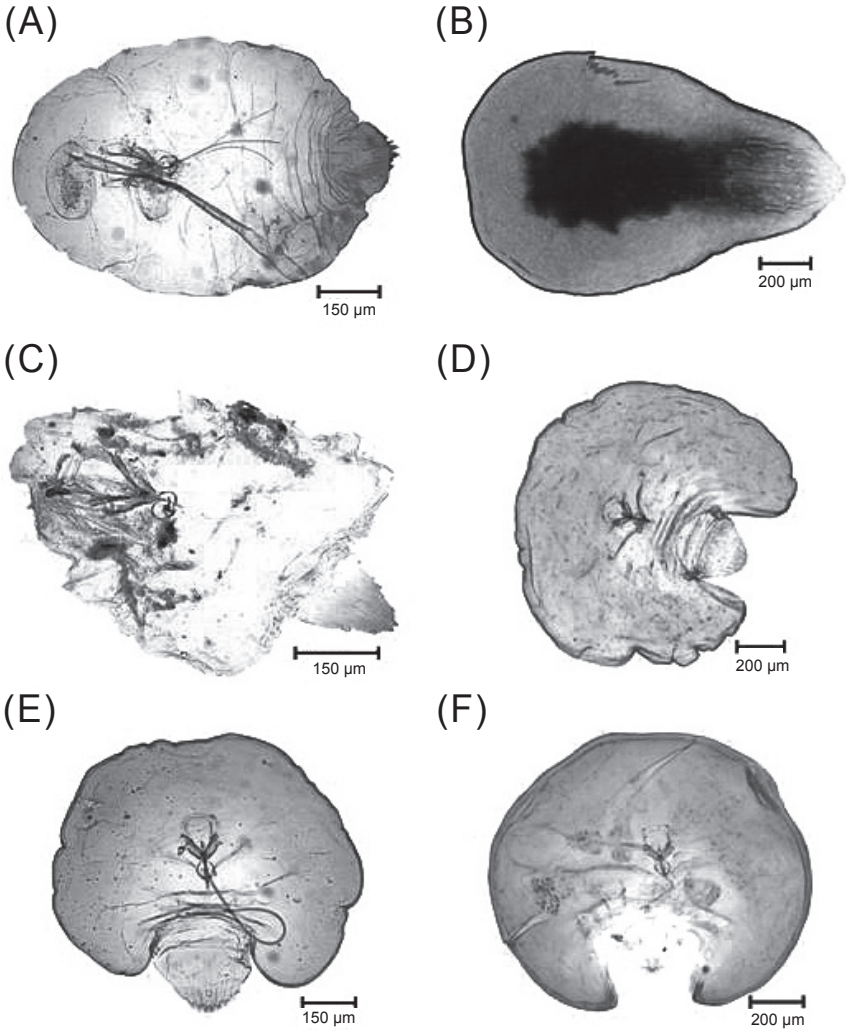

Fig. 1. (A) *Abgrallaspis cyanophylli* (Signoret 1869); (B) *Aonidia formosana* (Takahashi 1935); (C) *Aonidia rarasana* (Takahashi 1934); (D) *Aonidiella aurantii* (Maskell 1879); (E) *Aonidiella citrina* (Coquillett 1891); and (F) *Aonidiella godfreyi* (Takahashi 1942).

Table 1. A check list of the old name, current name and Chinese name of collection localities included in the paper.

Old name	Current name	Chinese name
Bokoto	Penghu	澎湖
Botel Tobago	Taitung: Lanyu	台東：蘭嶼
Buruburu	Taitung: Haiduan	台東：海端
Chipponsan	Taitung: Zhiben Mountain	台東：知本山
Chushinron near Rokki	Kaohsiung: Paoshan nera Liouguei	高雄：寶山 近 六龜
Daichikko	Taitung: Dazhu	台東：大竹
Garambi, Garanbi	Pingtung: Eluanbi (Ouluanpi)	屏東：鵝鑾鼻
Gyochi	Nantou: Yuchi	南投：魚池
Habon	Nantou: Holuan	南投：合巒
Habon near Musha	Nantou: Holuan near Wushe	南投：合巒 近 霧社
Heitin	Taoyuan: Pinglin	桃園：坪林
Heito	Pingtung	屏東
Hinokiyama	New Taipei City: Kuaishan	新北市：檜山
Hori, Horin	Nantou: Puli	南投：埔里
Hsintien	New Taipei City: Xindian	新北市：新店
Ikenohata	Yilan: Chihtuan	宜蘭：池端
Iran	Yilan	宜蘭
Kagi	Chiayi	嘉義
Kahodai	Taichung: Jiabaotai (Chiapaotai)	台中：佳保台
Kakayo, Kakayom	Taitung: Jiadai (Chiachiadai)	台東：嘉代 (嘉嘉代)
Kanaron	Taitung: Jinlun (Chinlun)	台東：金崙
Karenko	Hualien	花蓮
Kashoto	Taitung: Ludao (Lyudao)	台東：綠島
Kiirun	Keelung	基隆
Kinyan	Yilan: Jinyang (Chinyang)	宜蘭：金洋
Komoko	Hsinchu: Xinfeng (Sinfong)	新竹：新豐
Kotosho	Taitung: Lanyu	台東：蘭嶼
Kowarun	Taitung: Daren	台東：達仁
Kuraru	Pingtung: Sheding	屏東：社頂
Mako	Penghu: Magong	澎湖：馬公
Maruyama	Taipei: Yuanshan	台北：圓山
Mato	Tainan: Madou	台南：麻豆
Murorafu, Muroruafu, Mururoafu	Yilan: Jialuo Mountain (Chialoshan)	宜蘭：加羅山
Mutosan	Pingtung: Wutoushan	屏東：霧頭山
Nisui	Changhua: Ershui	彰化：二水
Onoe near Musha	Nantou: Weishang near Wushe	南投：尾上 近 霧社
Raisha	Pingtung: Laiyi	屏東：來義
Rarasan	New Taipei City: Lala Mountain (Lalashan)	新北市：拉拉山
Rirei	Taichung: Lileng	台中：裡冷
Riyohen	Yilan, Liuxingshe	宜蘭 , 流興社

Table 1. A check list of the old name, current name and Chinese name of collection localities included in the paper. (continued)

Old name	Current name	Chinese name
Ropi near Heito	Pingtung	屏東：近墾丁
Shijukei	Pingtung: Sichongxi (Suchungchi)	屏東：四重溪
Shimpo, Shimpro	Hsinchu: Xinpu	新竹：新埔
Shinten	New Taipei City: Xindian	新北市：新店
Shintiku	Hsinchu	新竹
Shin-Taiheizan	Yilan: Taiping Mountain (Taipingshan)	宜蘭：太平山
Shirin	Taipei: Shilin	台北：士林
Shoka	Changhua	彰化
Shokwa	Tainan, Xinhua, Damujiang	台南：新化：大目降
Sozan	Taipei: Yangmingshan	台北：陽明山
Suisha	Nantou: Shuishe	南投：魚池：水社
Suo	Yilan: Su'ao	宜蘭：蘇澳
Taichu	Taichung	台中
Taiheizan, Taihezan, Taiheisan	Yilan: Taiping Mountain (Taipingshan)	宜蘭：太平山
Taihoku, Taipei	Taipei	台北
Tainan	Tainan	台南
Taito, Taitocho	Taitung	台東
Taka, Takaoshu	Kaohsiung	高雄
Tamsu, Tansui	New Taipei City: Danshui (Danshuei)	新北市：淡水
Toran	Taitung: Dulan (Doulan)	台東：都蘭
Urai	New Taipei City: Wulai	新北市：烏來
Washoshu	Nantou: Hoshe (Washa)	南投：和社
Yensuiko	Tainan: Yanshui	台南：鹽水

Nantou: Suisha; Taihoku: Shinten, Taihoku).

Host plant: *Camellia japonica*, *Gardenia* sp., *Mangifera indica*, *Palm* sp., *Tectona grandis*.

Syn.: *Aspidiotus cyanophylli* Signoret, 1869; *Aspidiotus* (*Aspidiotus*) *cyanophylli* (Signoret 1869); *Aspidiotus* (*EvAspidiotus*) *cyanophylli* (Signoret 1869); *Furcaspis cyanophylli* (Signoret 1869); *Furcaspis* (*Aspidiotus*) *cyanophylli* (Signoret 1869); *Hemiberlesia cyanophylli* (Signoret 1869); *DiAspidiotus cyanophylli* (Signoret 1869); *Aspidiotus* (*Hemiberlesia*) *cyanophylli* (Signoret 1869).

***Aonidia formosana* Takahashi, 1935** (Fig. 1B)

(Takahashi 1935; Borchsenius 1966; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aonidia tentaculata formosana* Tak. (2 slides)

Distribution: Taiwan (Nantou: Habon, Habon near Musha).

Host plant: *Cinnamomum* sp.

Syn.: *Aonidia tentaculata formosana* Takahashi, 1935.

Note: Syntypes, female [collected from Taiwan: Habon near Musha, on *Cinnamomum* sp., on 10-VIII-1934.by R. Takahashi (#15-2-5-1–2)].

***Aonidia rarasana* Takahashi, 1934** (Fig. 1C)

(Takahashi 1934; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aonidia rarasana* Takah. (3 slides)

Distribution: Taiwan (Taipei: Rarasan).

Syn.: *Gymnaspis rarasana* (Takahashi, 1934).

Note: Syntypes, female [collected from Taiwan: Rarasan, near Urai, on undetermined host, on 31-VII-1933, by R. Takahashi (#15-2-4-1–3)].

***Aonidiella aurantii* (Maskell 1879)** (Fig. 1D)
(Maskell 1879; Berlese 1895;Tao 1989; Wong et al. 1999)

(1) Original spelling on label: *Aspidiotus aurantii* Mask. (7 slides)

Distribution: China (Foochow); Taiwan (Heito: Heito, Shijukei; Taihoku: Tansui; Taito); USA (Saipan: Garapan).

(2) Original spelling on label: *Aonidiella aurantii* Mask. (21 slides)

Distribution: India (Bannu; Darband; Goriwala: Shah Pasand; Lyallpur); Japan (Kyushu: Kagoshima); Micronesia (Caroline Isls.: Truk: Toloas-Erin); Palau Isls. (Babeldaob); Taiwan (Giran: Muroruafu, Mururoafu; Heito: Garambi, Kuraru; Taihoku: Shirin, Taihoku); Thailand (Ubon).

(3) Original spelling on label: *Chrysomphalus aurantii* Mask. (26 slides)

Distribution: Japan (Yamaguchi); Palau Isls. (Korror); Taiwan (Giran: Ikenohata, Murorafu, Riyohen; Heito; Kagi; Naii; Taichu: Kahodai; Taihoku; Tainan: Mato; Taito: Daichikko, Kakayo; Takao: Chushinron near Rokki, Takao).

Host plant: *Ardisia* sp., *Asparagus* sp., *Bischofia* sp., *Citrus Grundis*, *Citrus* sp., *Citrus tachibana*, *Distylium racemosum*, *Gelonium aequoreum*, *Illicium tashiroi*, *Mangifera indica*, Malta fruit, *Padocarpus* sp., *Pandanus* sp., *Pinus* sp., *Scaevola taccada*, *Scolopia oldhami*, *Yucca gloriosa*.

Syn.: *Aspidiotus aurantii* Maskell, 1879; *Aonidia gennadii* Targioni Tozzetti, 1881; *Aspidiotus coccineus* Gennadius, 1881; *Aspidiotus citri* Comstock, 1881; *Aspidiotus* (*Aonidiella*) *aurantii* (Maskell, 1879); *Chrysomphalus* (*Aonidiella*) *aurantii* (Maskell, 1879); *Aspidiotus* (*Chrysomphalus*) *aurantii* (Maskell, 1879); *Chrysomphalus citri* (Comstock, 1881); *Aonidiella coccineus* (Gennadius, 1881); *Aonidiella gennadi* (Targioni Tozzetti, 1881); *Chrysomphalus coccineus* (Gennadius, 1881).

***Aonidiella citrina* (Coquillett 1891)** (Fig. 1E)
(Lindinger 1914; Tao 1989)

(1) Original spelling on label: *Aonidiella citrina* Coq. (7 slides)

Distribution: India (Bannu); Japan (Kyushu: Kagoshima, Oita); Taiwan (Pintung: Garanbi).

(2) Original spelling on label: *Chrysomphalus citrina* Coq. (2 slides)

Distribution: Taiwan (Yilan: Riyohen).

Host plant: *Citrus* sp., *Gelonium aequoreum.*, *Syzygium cumini*.

Syn.: *Aspidiotus citrinus* Coquillett, 1891; *Aspidiotus aurantii citrinus* (Coquillett 1891); *Aspidiotus* (*Aonidiella*) *aurantii citrinus* (Coquillett 1891); *Aonidiella aurantii citrina* (Coquillett 1891); *Chrysomphalus aurantii citrinus* (Coquillett 1891); *Chrysomphalus citri*nus (Coquillett 1891); *Aonidiella citrina* (Coquillett 1891); *Chrysomphalus citrina* (Coquillett 1891).

***Aonidiella godfreyi* Takahashi, 1942** (Fig. 1F)
(Takahashi 1942; Ben-Dov & Miller 2010)

Original spelling on label: *Aonidiella godfreyi* Takah. (1 slide)

Distribution: Thailand (Chiengmai).

Host plant: undetermined tree.

Note: Syntype, female [collected from Thailand: Chiengmai, on an undetermined tree , 02-IV-1940, by R. Takahashi (#16-1-3-1)].

***Aonidiella inornata* McKenzie, 1938** (Fig. 2A) (McKenzie 1938; Tao 1989)

Original spelling on label: *Aonidiella inornata* McKenzie. (11 slides)

Distribution: Japan (Kyushu: Kagoshima); Micronesia (Caroline Isls.: Oleai-Atoll: Falulap; Yap: Okao); Palau Isls. (Korror: Arabaketsu, Korror, Makalai); Taiwan (Tainan).

Host plant: *Campno sperma*, *Carica papaya*, *Cocos nucifera*, *Mascarema lagenicaulis*, *Piper kadsura*, *Plumeria acuminata*.

***Aonidiella orientalis* (Newstead 1894)** (Fig. 2B) (Newstead 1894; McKenzie 1938; Chou 1985)

Original spelling on label: *Aonidiella orientalis* Newst. (3 slides)

Distribution: India (Lyallpur); Malaysia (Malaya: Serdang).

Host plant: Cocos nucifera, Dalbergia sp..

Syn.: *Aspidiotus orientalis* Newstead, 1894; *Aspidiotus osbeckiae* Green, 1896; *Aspidiotus* (*DiAspidiotus*) *osbeckiae* (Newstead, 1894); *Aspidiotus* (*EvAspidiotus*) *orientalis* (Newstead, 1894); *Aspidiotus* (*Chrysomphalus*) *pedronis* Green, 1905; *Aspidiotus* (*Aonidiella*) *taprobanus* Green, 1905; *Chrysomphalus pedronis* (Newstead, 1894); *Chrysomphalus taprobanus* (Newstead, 1894); *Aspidiotus* (*Aonidiella*) *cocotiphagus* Marlatt, 1908; *Aspidiotus cocotiphagus* (Newstead, 1894); *Chrysomphalus orientalis* (Newstead, 1894); *Chrysomphalus pedroniformis* Cockerell & Robinson, 1915; *Furcaspis cocotiphaga* (Newstead, 1894); *Furcaspis orientalis* (Newstead, 1894); *Aonidiella taprobana* (Newstead, 1894); *Aspidiotus orientalis cocotiphagus* (Newstead, 1894); *Aspidiotus* (*Furcaspis*) *orientalis* (Newstead, 1894); *Aonidiella orientalis* (Newstead, 1894); *Aonidiella cocotiphagus* (Newstead, 1894); *Aonidiella pedroniformis* (Newstead, 1894); *Aonidiella pedronis* (Newstead, 1894).

***Aonidiella sotetsu* (Takahashi 1933)** (Fig. 2C) (Takahashi 1933; McKenzie 1938; Ben-Dov & Miller 2010)

Original spelling on label: *Chrysomphalus sotetsu* Takahashi. (4 slides)

Distribution: Japan (Loochoo: Ishigaki, Miyako).

Host plant: *Cycas* sp., *Ficus retusa*.

Syn.: *Chrysomphalus sotetsu* Takahashi, 1933.

Note: Syntypes, female [collected from Japan: Ishigaki, Miyako, on *Cycas revoluta* and *Ficus retusa*. III-1932 and VII-1932 by S. Yasukawa (#19-2-1-1–4)].

***Aonidiella taxus* Leonardi, 1906** (Fig. 2D) (Leonardi 1906; Sanders 1909; McKenzie 1938; Tao 1989)

(1) Original spelling on label: *Aonidiella taxus* Leon. (2 slides)

Distribution: Japan (Kyushu: Kagoshima, Tanegashima).

(2) Original spelling on label: *Chrysomphalus taxus* Leon. (2 slides)

Distribution: Taiwan (Takao).

Host plant: *Ardisia sieboldii*, *Nageia nagi*, *Podocarpus* sp..

Syn.: *Aonidiella taxa* (Leonardi, 1906); *Chrysomphalus taxus* (Leonardi, 1906); *Aspidiotus taxus* (Leonardi, 1906).

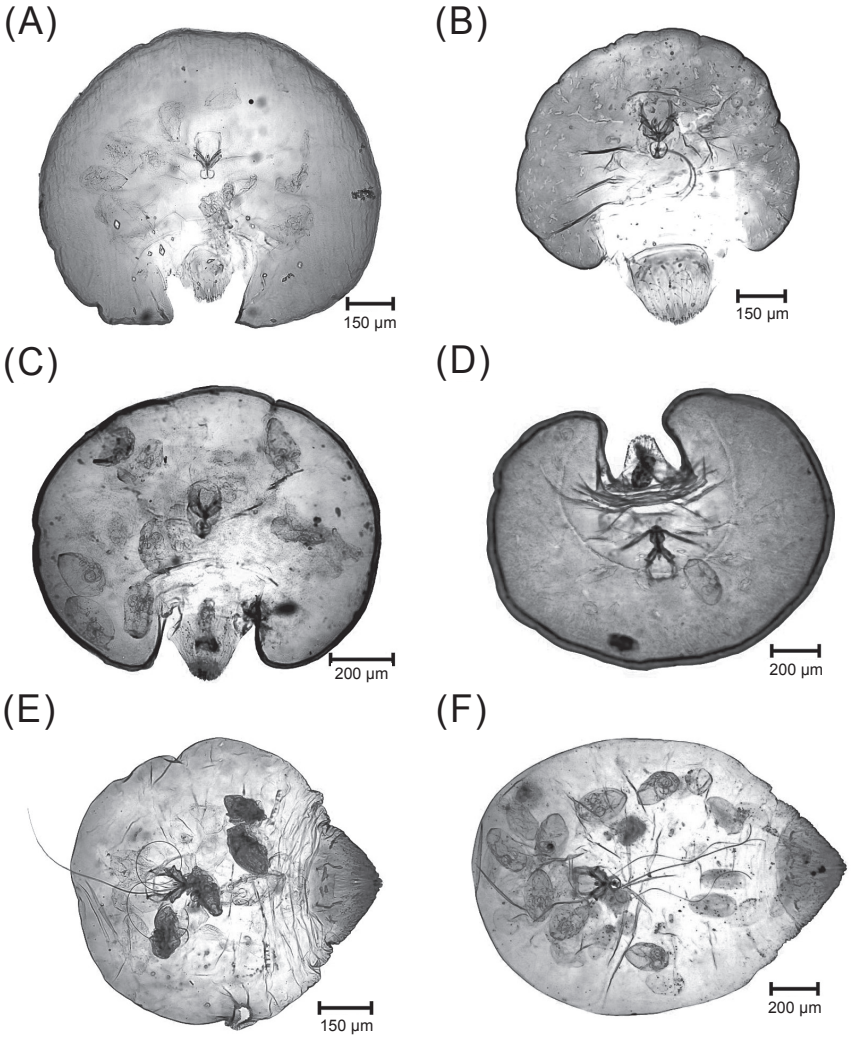

Fig. 2. (A) *Aonidiella inornata* (McKenzie 1938); (B) *Aonidiella orientalis* (Newstead 1894); (C) *Aonidiella sotetsu* (Takahashi 1933); (D) *Aonidiella taxus* (Leonardi 1906); (E) *Aspidiella phragmitis* (Takahashi 1931); and (F) *Aspidiella sacchari* (Cockerell 1893).

***Aspidiella phragmitis* (Takahashi 1931)** (Fig. 2E) (Takahashi 1931c; Ferris 1941; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aspidiotus phragmitis* Tak. (10 slides)

Distribution: Taiwan (Giran: Kinyan, Suo; Taihoku: Shinten, Taihoku; Taito: Daichikko).

Host plant: *Phragmites* sp..

Syn.: *Aspidiotus phragmitis* Takahashi, 1931; *Aspidiotus miscanthii* Kuwana, 1931; *Chortinaspis phragmitis* (Takahashi 1931).

Note: Syntypes, female [collected from Taiwan: Suo, Daichikko near Daibu, on *Phragmites* sp. , 20–25-XI-1930 by R. Takahashi (#17-4-4-1–4)].

***Aspidiella sacchari* (Cockerell 1893)** (Fig. 2F) (Cockerell 1893a; MacGillivray 1921; Chou 1985)

Original spelling on label: *Aspidiotus sac-*

chari Ckll. (3 slides)

Distribution: Japan (Okinawa: Daito-jima); USA (Saipan: Garapan)

Host plant: *Phragmites* sp..

Syn.: *Aspidiotus sacchari* Cockerell, 1893; *Aspidiotus* (*Aspidiotus*) *sacchari* (Cockerell 1893); *Aspidiotus* (*Aspidiella*) *sacchari* (Cockerell 1893); *Targionia sacchari* (Cockerell 1893); *Targionia* (*Aspidiella*) *sacchari* (Cockerell 1893).

***Aspidiotus destructor* Signoret, 1869** (Fig. 3A) (Tao 1989; Wong *et al*. 1999)

(1) Original spelling on label: *Aspidiotus destructor* Signt. (34 slides)

Distribution: Cambodia (Angkor); China (Shanghai); Japan (Kyoto); Malaysia (Malaya: K. Lumpur); Palau Isls. (Angaur: Saipan-Kitamura; Babeldao: Ngiwal-Ngarard; Korror); Taiwan (Giran: Ikenohata; Taihoku: Hinokiyama, Shirin, Taihoku; Tainan); Thailand (Chiengmai; Mt. Sutep); USA (Rota: Tatacho-Sonson; Saipan: Garapan, Saipan).

(2) Original spelling on label: *Aspidiotus transparens* Green. (10 slides)

Distribution: China (Taichow: Checkiang); Malaysia (Malaya: K. Lumpur); Taiwan (Heito: Garanbi, Mutosan; Taito: Kotosho, Toran; Takao).

Host plant: *Aucuba japonica*, *Avocado* sp., *Carica papaya*, *Citrus* sp., *Cleyera japonica*, *Dimocarpus longan*, *Dypsis lutescens*, *Ficus elastic*, *Ficus retusa*, *Ficus* sp., *Illicium anisatum*, *Lithocarpus* sp., *Mangifera indica*, *Musa* sp., *Palm*, *Panaanus* sp., *Plumeria rubra*, *Psychotrya* sp., *Scolopia* sp., *Stephania cepharantha*, *Trachycarpus wagnerianus*, *Vitis* sp..

Syn.: *Aspidiotus cocotis* Newstead, 1893; *Aspidiotus fallax* Cockerell, 1893; *Aspidiotus vastatrix* Leroy, 1896; *Aspidiotus destructor fallax* (Signoret 1869); *Aspidiotus* (*Aspidiotus*) *transparens* (Signoret 1869); *Aspidiotus* (*Aspidiotus*) *destructor* (Signoret 1869); *Aspidiotus transparens* Green, 1890; *Aspidiotus transparens simillimus* Cockerell, 1898.

***Aspidiotus excisus* Green, 1896** (Fig. 3B) (Green 1896b; MacGillivray 1921; Williams & Watson 1988; Tao 1989; Wong *et al*. 1999)

Original spelling on label: *Aspidiotus excisus* Green. (18 slides)

Distribution: Palau Isls. (Korror); Taiwan (Heito: Garanbi, Raisha; Nantou: Hori, Suisha; Taihoku: Shinten, Sozan, Taihoku, Washoshu; Taito: Buruburu, Kashoto, Kowarun; Urai).

Host plant: *Clerodendrum inerme*, *Elephantopus* sp., *Heliotropium foertherianum*, *Hoya* sp., *Glochidion* sp., *Rhododendron* sp., *Rhus* sp., *Viburnum* sp..

Syn.: *Aspidiotus* (*Aspidiotus*) *excisus* (Green 1896); *Aspidiotus* (*EvAspidiotus*) *excisus* (Green 1896); *TemnAspidiotus excisus* (Green 1896).

***Chrysomphalus aonidum* (Linnaeus 1758)** (Fig. 3C) (Linnaeus 1758; Cockerell 1899b; Tao 1989)

Original spelling on label: *Chrysomphalus aonidum* L. (24 slides)

Distribution: China (Hainan); Japan (Kyushu: Tanegashima); Micronesia (Caroline Isls.: Ponape: Kolonia); Taiwan (Giran: Giran, Taihezan; Heito: Garanbi, Heito; Kagi; Kiirun; Nantou: Hori; Shoka: Nisui; Taihoku; Tainan: Yensuiko; Taito; Toen: Heitin).

Host plant: *Areca catechu*, *Citrus* sp., *Cycas* sp., *Galium echinocarpum*, *Gentiana*

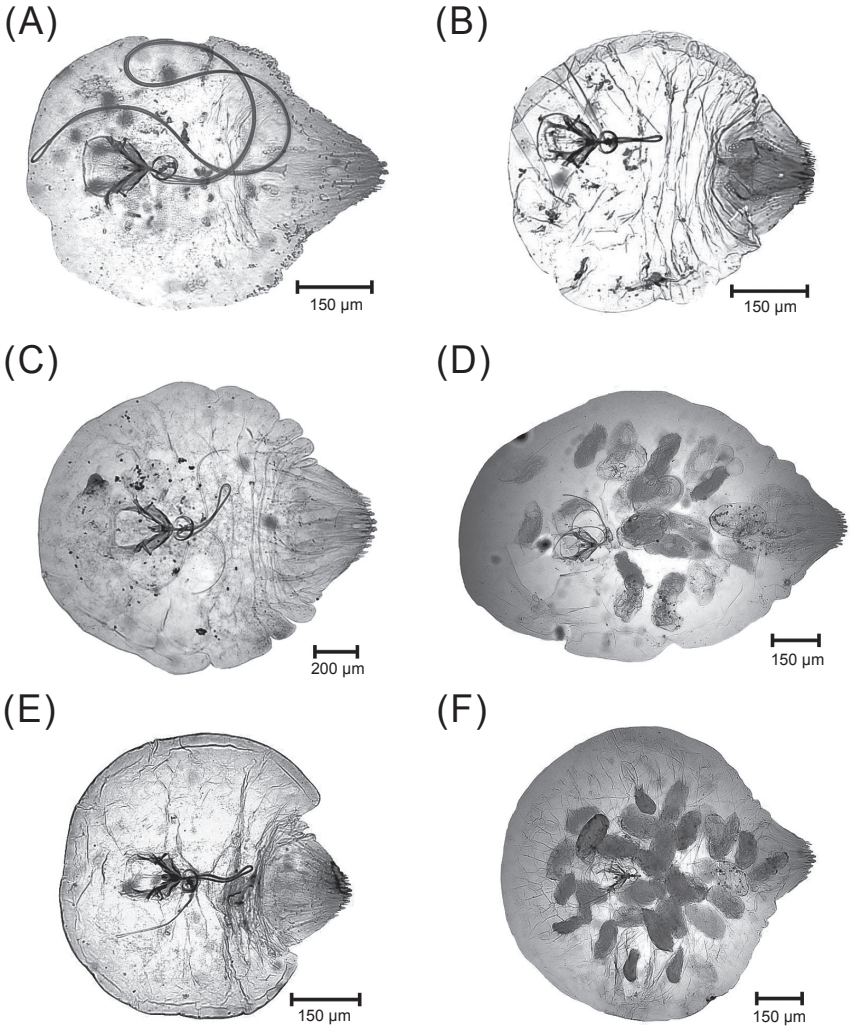

Fig. 3. (A) *Aspidiotus destructor* (Signoret 1869); (B) *Aspidiotus excisus* (Green 1896); (C) *Chrysomphalus aonidum* (Linnaeus 1758); (D) *Chrysomphalus bifasciculatus* (Ferris 1938); (E) *Chrysomphalus dictyospermi* (Morgan 1889); and (F) *Chrysomphalus pinnulifer* (Maskell 1891).

scabra, *Kandelia obovata*, *Mahonia japonica*, Palm, P*andanus odoratissimus*, *Pinus* sp., *Podocarpus macrophylla*, *Rosa* sp., *Thea* sp..

Syn.: *Coccus aonidum* Linnaeus, 1758; *Chrysomphalus ficus* Ashmead, 1880; *Aspidiotus* (*Chrysomphalus*) *ficus* (Ashmead 1880); *Aspidiotus* (*Chrysomphalus*) *aonidum* (Linnaeus 1758); *Aspidiotus aonidum* (Linnaeus 1758).

***Chrysomphalus bifasciculatus* Ferris, 1938** (Fig. 3D) (Tao 1989)

Original spelling on label: *Chrysomphalus bifasciculatus* Ferris. (4 slides)

Distribution: Taiwan (Heito: Garanbi; Nantou: Suisha).

Host plant: *Cycas* sp., *Pandanus* sp..

***Chrysomphalus dictyospermi* (Morgan 1889)** (Fig. 3E) (Morgan 1889; Maskell 1895; Tao 1989)

Original spelling on label: *Chrysomphalus*

dictyospermi Morg. (9 slides)

Distribution: Palau (Korror); Samoa; Taiwan (Heito; Shintiku: Komoko, Shimpro; Taihoku).

Host plant: *Cocos nucifera*, *Kandelia obovata*, *Mangifera indica*, *Phragmites* sp., *Pinus* sp..

Syn.: *Aspidiotus dictyospermi* Morgan, 1889; *Aspidiotus dictyospermi arecae* Newstead, 1893; *Aspidiotus mangiferae* Cockerell, 1893; *Aspidiotus arecae* (Newstead 1893); *Aspidiotus dictyospermi jamaicensis* Cockerell, 1894; *Chrysomphalus dictyospermi* (Morgan 1889); *Chrysomphalus minor* Berlese in Berlese & Leonardi, 1896; *Aspidiotus minor* (Berlese in Berlese & Leonardi 1896); *Aspidiotus* (*Chrysomphalus*) *dictyospermi* (Morgan 1889); *Aspidiotus* (*Chrysomphalus*) *dictyospermi arecae* (Morgan 1889); *Aspidiotus* (*Chrysomphalus*) *dictyospermi jamaicensis* (Cockerell 1894); *Aspidiotus* (*Chrysomphalus*) *mangiferae* (Morgan 1889); *Aspidiotus* (*Chrysomphalus*) *minor* (Berlese in Berlese & Leonardi 1896); *Chrysomphalus mangiferae* (Cockerell 1893); *Chrysomphalus dictyospermi arecae* (Morgan 1889); *Chrysomphalus dictyospermi mangiferae* (Morgan 1889); *Chrysomphalus dictyospermi minor* (Morgan 1889); *Aspidiotus agrumincola* De Gregorio, 1915; *Chrysomphalus dictyospermi agrumicola* De Gregorio, 1915; *Chrysomphalus arecae* (Newstead 1893); *Chrysomphalus jamaicensis* (Cockerell 1894); *Chrysomphalus castigatus* Mamet, 1936; *Aspidiotus agrumincola* (Cockerell 1894).

***Chrysomphalus pinnulifer* (Maskell 1891)** (Fig. 3F) (Maskell 1891; Chamberlin 1927)

Original spelling on label: *Chrysomphalus pinnulifer* Maskell. (1 slide)

Distribution: Thailand (Ubon).

Host plant: Lauracea.

Syn.: *Diaspis pinnulifera* Maskell, 1891; *Chrysomphalus dictyospermi pinnulifera* (Maskell 1891); *Chrysomphalus pinnuliferus* (Maskell 1891); *Aspidiotus* (*Chrysomphalus*) *pinnulifera* (Maskell 1891); *Aspidiotus pinnuliferus* (Maskell 1891).

***ClavAspidiotus tayabanus* (Cockerell 1905)** (Fig. 4A) (Takahashi 1933; McKenzie 1939; Takagi 1974)

Original spelling on label: *Chrysomphalus tayabanus* Ckll. (2 slides)

Distribution: Taiwan (Taito).

Syn.: *Aspidiotus tayabanus* Cockerell, 1905; *Aonidiella tayabana* (Cockerell 1905); *Chrysomphalus tayabanus* (Cockerell 1905); *Clavaspis tayabanus* (Cockerell 1905).

***Cryptoparlatorea pini* Takahashi, 1938** (Fig. 4B) (Takahashi 1938; Ben-Dov & Miller 2010)

Original spelling on label: *Cryptoparlatoria pini* Takah. (19 slides)

Distribution: India (Manali).

Host plant: *Pinus* sp..

Note: Syntypes, female [collected from India: Himachal Pradesh, Manali, Punjab, on *Pinus* sp., 18-VIII-1937 by Mr. Ansari ($^{\#}$25-1-1-1–$^{\#}$25-1-4-4)].

***Cryptoparlatoreopsis longispina* (Takahashi 1939)** (Fig. 4C) (Takahashi 1939; Borchsenius 1966; Ben-Dov & Miller 2010)

Original spelling on label: *Aonidia longispina* Takah. (6 slides)

Distribution: India (Bannu: Nurar Road).

Host plant: *Ziziphus mauritiana*.

Note: Syntypes, female [collected from India:

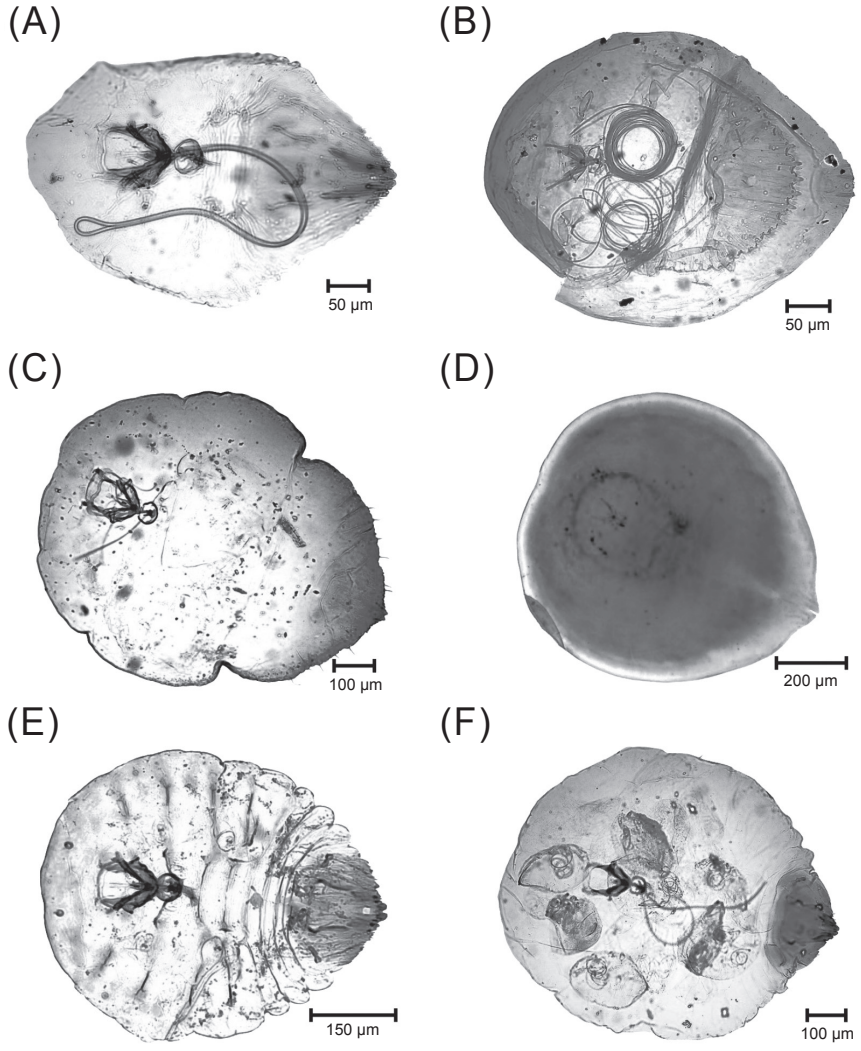

Fig. 4. (A) *Clavaspidiotus tayabanus* (Cockerell 1905); (B) *Cryptoparlatorea pini* (Takahashi 1938); (C) *Cryptoparlatoreopsis longispina* (Takahashi 1939); (D) *Diaonidia cinnamomi* (Takahashi 1936); (E) *Diaspidiotus makii* (Kuwana 1932); and (F) *Diaspidiotus perniciosus* (Comstock 1881).

Punjab, Bannu, on "Ber." 16-VIII-1938 by Ansari (#15-2-2-1–15-2-3-1)].

***DiAonidia cinnamomi* (Takahashi 1936)** (Fig. 4D)

(Takahashi 1936; Borchsenius 1966; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aonidia cinnamomi* Takah. (1 slide)

Distribution: Taiwan (Takao: Chushinron near Rokki).

Host plant: *Cinnamomum* sp..

Syn.: *Aonidia cinnamomi* Takahashi, 1936; *Gymnaspis cinnamomi* Takahashi, 1936.

Note: Syntype, female [collected from Taiwan: Chushinron near Rokki, Takao Prefecture, on *Cinnamomum* sp., 19-V-1935 by R. Takahashi (#15-2-1-1)].

***DiAspidiotus makii* (Kuwana 1932)** (Fig. 4E)

(Kuwana 1932; Borchsenius 1966)

Original spelling on label: *Aspidiotus makii*

Kuw. (2 slides)

Distribution: Japan (Loochoo: Naha).

Host plant: *Pinus* sp..

Note: Specimens, [collected from Japan: Naha, Loochoo, on *Pinus* sp., IV-1930 by R. Takahashi (#17-2-2-1–17-2-2-2)].

***DiAspidiotus perniciosus* (Comstock 1881)** (Fig. 4F) (Comstock 1881; Tao 1989; Cockerell 1899a;Wong et al. 1999)

Original spelling on label: *Forbesaspis perniciosus* Comst. (5 slides)

Distribution: India (Parachanar); Korea.

Host plant: *Malus domestica*.

Syn.: *Aspidiotus perniciosus* Comstock, 1881; *Aonidia fusca* Maskell, 1895; *Aspidiotus albopunctatus* Cockerell, 1896; *Aonidiella fusca* (Maskell 1895); *Aonidiella perniciosa* (Comstock 1881); *Aspidiotus* (*DiAspidiotus*) *andromelas* Cockerell, 1897; *Aspidiotus* (*DiAspidiotus*) *perniciosus albopunctatus* (Comstock 1881); *Aspidiotus* (*DiAspidiotus*) *perniciosus* (Comstock 1881); *DiAspidiotus perniciosus andromelas* (Comstock 1881); *Aonidiella andromelas* Cockerell, 1897; *Aspidiotus perniciosus albopunctatus*; Cockerell, 1897; *Aspidiotus perniciosus andromelas* (Comstock 1881); *Aspidiotus* (*DiAspidiotus*) *perniciosus* (Comstock 1881); *Aspidiotus* (*Hemiberlesia*na) *perniciosus* (Comstock 1881); *Aspidiotus* (*Comstockaspis*) *perniciosus* (Comstock 1881); *QuadrAspidiotus perniciosus* (Comstock, 1881).

***DuplAspidiotus tesseratus* (Grandpré & Charmoy 1899)** (Fig. 5A) (Ferris 1938)

Original spelling on label: *DuplAspidiotus tessellatus* de Charmoy. (1 slide)

Distribution: Malaysia (Malaya: Serdang).

Host plant: *Bertholletia excelsa*.

Syn.: *Aspidiotus* (*DiAspidiotus*) *tesseratus* Grandpré & Charmoy, 1899; *Aspidiotus tesseratus* (Grandpré & Charmoy 1899); *PseudAonidia tesserata* (Grandpré & Charmoy 1899); *PseudAonidia oreodoxae* Rutherford, 1914; *LattAspidiotus oreodoxae* (Rutherford 1914); *LattAspidiotus tesserata* (Grandpré & Charmoy 1899); *PseudAonidia subtesserata* Green & Laing, 1923; *DuplAspidiotus subtesseratus* (Green & Laing 1923); *PseudAonidia* (*DuplAspidiotus*) *tesserata* (Grandpré & Charmoy 1899).

***DynAspidiotus pseudomeyeri* (Kuwana 1932)** (Fig. 5B) (Kuwana 1932; Takahashi & Takagi 1957)

Original spelling on label: *Aspidiotus pseudomeyeri* Kuw. (1 slide)

TARI specimens Distribution: Japan (Kagawa-ken).

Host plant: *Chamaecyparis obtuse*.

Syn.: *Aspidiotus pseudomeyeri* Kuwana, 1932; *TsugAspidiotus pseudomeyeri* (Kuwana 1932); *Nuculaspis pseudomeyeri* (Kuwana 1932).

***Furcaspis oceanica* Lindinger, 1909** (Fig. 5C) (Lindinger 1909; Borchsenius 1966)

(1) **Original spelling on label:** *Aspidiotus oceanica* Lind. (2 slides)
Distribution: USA (Saipan).

(2) **Original spelling on label:** *Chrysomphalus saipanensis* Sasaki. (6 slides)
Distribution: Micronesia (Caroline Isls.: Kusai); Palau (Korror).

(3) **Original spelling on label:** *Furcaspis oceanica* Lindg. (18 slides)
Distribution: Marshall Isls. (Jaluit-Imej; Watje); Micronesia (Caroline Isls.: Kusaie: Lelo; Ponape: Matalanim-Nipit, Paliker; Truk: Fefan, Fefan Mesa-Urunna, Pata Sabote, Sabote, Teiso Esaki); Palau Isls. (Kajangl;

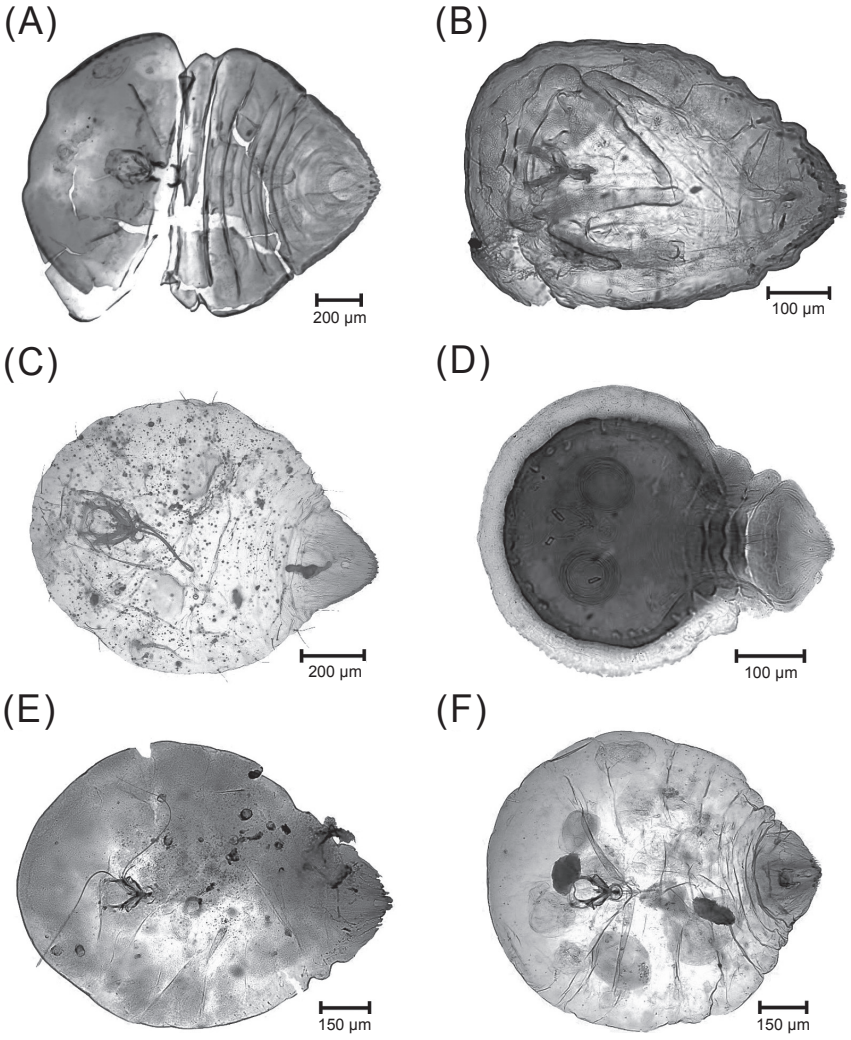

Fig. 5. (A) *Duplaspidiotus tesseratus* (Grandpré & Charmoy 1899); (B) *Dynaspidiotus pseudomeyeri* (Kuwana 1932); (C) *Furcaspis oceanica* (Lindinger 1909); (D) *Greeniella lahoarei* (Takahashi 1931); (E) *Hemiberlesia chipponsanensis* (Takahashi 1935); and (F) *Hemiberlesia lataniae* (Signoret 1869).

Korror).

Host plant: *Clinostigma ponapensis*, *Cocos nucifera*, *Musa* sp., Palm, *Pandanus* sp., *Roystonea regia*, *Nypa fruticans*.

Syn.: *Aspidiotus oceanica* Lindinger, 1909; *Furcaspis oceanica* (Lindinger 1909); *SpinAspidiotus oceanicus* (Lindinger 1909); *Chrysomphalus saipanensis* Sasaki, 1935; *Furcaspis saipanensis* (Sasaki 1935).

***Greeniella lahoarei* (Takahashi 1931)** (Fig. 5D) (Takahashi 1931a; Borchsenius 1966; Ben-Dov & Miller 2010)

Original spelling on label: *Aonidia lahoarei* Takah. (8 slides)

Distribution: Taiwan (Nantou: Suisha; Taihoku: Sozan).

Host plant: *Eugenia* sp., *Syzygium buxifolium*.

Syn.: *Aonidia* (*Greeniella*) *lahoarei* Takahashi, 1931.

Note: Syntypes, female (collected from Taiwan: Sozan, Suisha, on *Eugenia* sp., 26-

I-1930 by E. Kurosawa (#15-1-2-1–3)).

***Hemiberlesia chipponsanensis* (Takahashi 1935)** (Fig. 5E) (Takahashi 1935; Borchsenius 1966; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aspidiotus chipponensis* Takah. (1 slide)

Distribution: Taiwan (Taito: Chipponsan).

Host plant: *Rhododendron metternichii*.

Syn.: *Aspidiotus chipponsanensis* Takahashi, 1935.

Note: Syntype, female (collected from Taiwan: Taito Province, Chipponsan, on *Rhododendron* sp., 23-III-1934 by R. Takahashi (#16-3-4-1)).

***Hemiberlesia lataniae* (Signoret 1869)** (Fig. 5F) (Cockerell 1905; Tao 1989; Wong *et al*. 1999)

Original spelling on label: *Aspidiotus lataniae* Signt. (31 slides)

Distribution: India (Bangalore); Malaysia (Malaya: Kuala Lumpur); Micronesia (Caroline Isls.: Truk: Toloas; Yap: Okao); Taiwan (Bokoto; Heito: Heito, Kuraru; Hualien: Karenko; Keelung; Taihoku: Maruyama, Taihoku; Taito; Takao); Thailand (Chiengmai; Mt. Sutep) USA (Saipan: Garapan, Maansha, Saipan).

Host plant: *Areca catechu*, *Averrhoa carambola*, *Barringtonia* sp., *Casuarina* sp., *Citrus* sp., *Chrysolidocarbus* sp., *Cycas* sp., *Diospyros discolor*, *Erythrodes latifolia*, *Gladiolus* spp., *Hibiscus* sp., Leguminosae, *Mangifera indica*, *Manilkara zapota*, *Pinus* sp., *Psidium* sp., *Samanea saman*, *Sandal* sp., *Thea* sp., *Vitis labrusca*.

Syn.: *Aspidiotus lataniae* Signoret, 1869; *Aspidiotus cydoniae* Comstock, 1881; *Aspidiotus punicae* Cockerell, 1893; *Aspidiotus diffinis lateralis* Cockerell, 1894; *Aspidiotus cydoniae tecta* Maskell, 1897; *Aspidiotus implicatus* Maskell, 1897; *Aspidiotus* (*Hemiberlesia*) *cydoniae* (Maskell 1897); *Aspidiotus* (*Hemiberlesia*) *crawii* Cockerell, 1897; *Aspidiotus* (*DiAspidiotus*) *punicae* (Cockerell 1893); *Aspidiotus* (*DiAspidiotus*) *greenii* Cockerell, 1897; *Aspidiotus* (*Aspidiotus*) *lataniae* (Signoret 1869); *Aspidiotus* (*EvAspidiotus*) *lataniae* (Signoret 1869); *Aspidiotus* (*EvAspidiotus*) *punicae* (Cockerell 1893); *Aspidiotus* (*EvAspidiotus*) *cydoniae* (Comstock 1881); *Hemiberlesia crawii* (Cockerell 1897); *Aspidiotus* (*EvAspidiotus*) *crawii* (Cockerell 1897); *Aspidiotus* (*EvAspidiotus*) *cydoniae tectus* (Maskell 1897); *Aspidiotus* (*EvAspidiotus*) *greenii* (Cockerell 1897); *Aspidiotus* (*EvAspidiotus*) *implicatus* (Maskell 1897); *Aspidiotus* (*Hemiberlesia*) *lataniae* (Signoret 1869); *Aspidiotus cydoniae crawii* (Comstock 1881); *Aspidiotus cydoniae punicae* (Comstock 1881); *Hemiberlesia lataniae* (Signoret 1869); *Aspidiotus cydoniae crawi* (Comstock 1881); *Aspidiotus cydoniae greeni* (Comstock 1881); *Aspidiella punicae* (Cockerell 1893); *Marlattaspis implicata* (Maskell 1897); *DiAspidiotus lataniae* (Signoret 1869); *Aspidiotus aspleniae* Sasaki, 1935; *DiAspidiotus* (*Aspidiotus*) *lataniae* (Signoret 1869); *Aspidiotus tectus* (Maskell 1897); *Hemiberlesia implicatus* (Maskell 1897).

***Hemiberlesia palmae* (Cockerell 1893)** (Fig. 6A) (Cockerell 1893b; Ferris 1938; Chou 1985)

Original spelling on label: *Aspidiotus javanensis* Kuwana. (8 slides)

Distribution: Fiji (Toverua); Japan (Honshu: Tokyo); Micronesia (Caroline Isls.:

Ponape: Kolonia); Palau Isls. (Koror).

Host plant: *Artocarpus communis*, *Avocado-pear* sp., *Cocos* sp..

Syn.: *Aspidiotus palmae* Morgan, 1893; *Aspidiotus* ***palmae*** Cockerell, 1893; *Aspidiotus* (*Hemiberlesia*) *palmae* (Cockerell 1893); *Aspidiotus* (*EvAspidiotus*) *palmae* (Cockerell 1893); *Aspidiotus unguiculatus* Leonardi, 1914; *Furcaspis palmae* (Cockerell 1893); *Aspidiotus javanensis* Kuwana in Kuwana & Muramatsu, 1931; *Abgrallaspis palmae* (Cockerell 1893); *Borchseniaspis palmae* (Cockerell 1893).

***Hemiberlesia rapax* (Comstock 1881)** (Fig. 6B)

(Comstock 1881; Ferris 1938; Bodenheimer 1949; Tao 1989)

Original spelling on label: *DiAspidiotus camelliae* (Signoret 1869) (6 slides)

Distribution: Taiwan (Nantou: Onoe near Musha).

Syn.: *Aspidiotus acuminatus* Targioni Tozzetti,

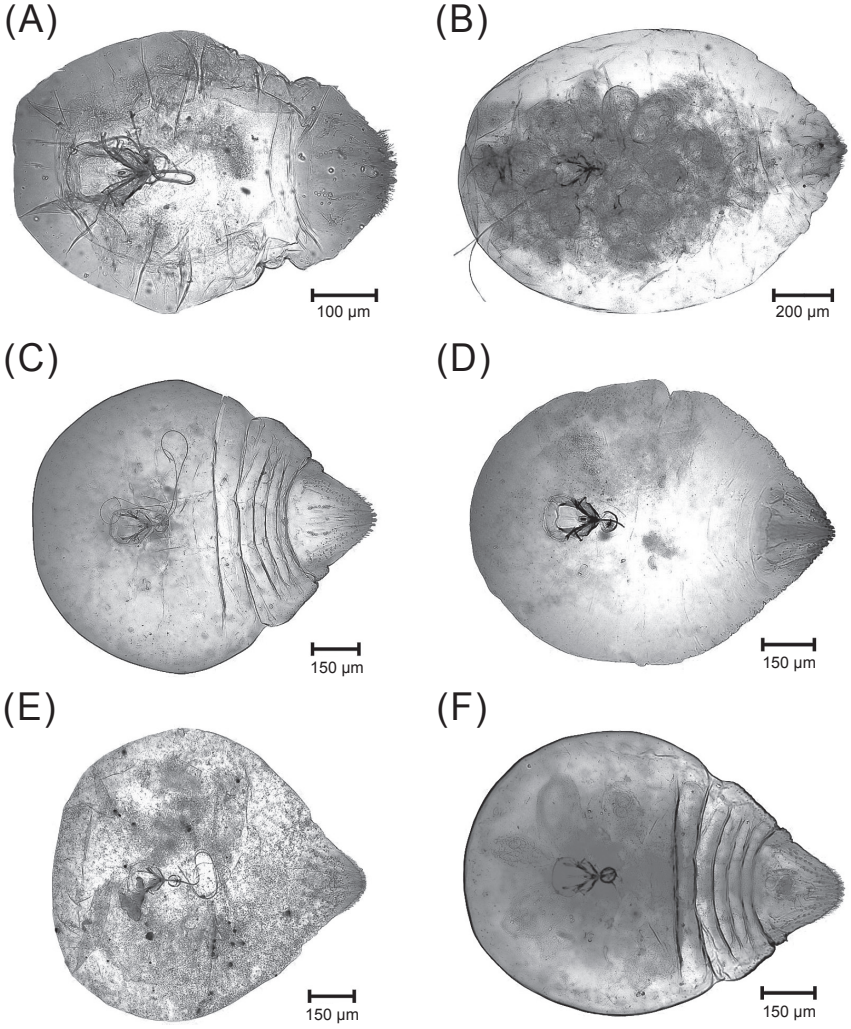

Fig. 6. (A) *Hemiberlesia palmae* (Cockerell 1893); (B) *Hemiberlesia rapax* (Comstock 1881); (C) *Lindingaspis rossi* (Maskell 1892); (D) *Melanaspis bromiliae* (Leonardi 1899); (E) *Octaspidiotus machili* (Takahashi 1931); and (F) *Octaspidiotus stauntoniae* (Takahashi 1933).

1881; *Aspidiotus rapax* Comstock, 1881; *Aspidiotus evonymi* Targioni Tozzetti, 1888; *Aspidiotus flavescens* Green, 1890; *DiAspidiotus camelliae* (Signoret 1869); *Diaspis circulata* Green, 1896; *Aspidiotus* (*Hemiberlesia*) *tricolor* Cockerell, 1897; *Aspidiotus lucumae* Cockerell, 1899; *Hemiberlesia argentina* Leonardi, 1911; *Hemiberlesiana camelliae* (Signoret 1869).

***Lindingaspis rossi* (Maskell 1892)** (Fig. 6C) (Maskell 1892; Leonardi 1897; Ferris 1938; Tao 1989)

Original spelling on label: *Chrysomphalus rossi* (Maskell 1892) (13 slides)

Distribution: Taiwan (Nantou: Gyochi; Heito; Shintiku: Komoko; Taihoku; Tainan: Shokwa; Taito: Taito, Toran; Takao).

Host plant: *Aalbizia lucida*, *Euonymus japonicas*, *Ficus nipponica*, *Kandelia obovata*, *Mangifera indica*, *Palm, Pyracantha* sp., *Scolopia* sp., *Sedum alboroseum*, *Vitis* sp..

Syn.: *Aspidiotus rossi* Maskell, 1892; *Chrysomphalus rossi* (Maskell 1892); *Aspidiotus* (*Chrysomphalus*) *rossi* (Maskell 1892); *Melanaspis rossi* (Maskell 1892); *Aonidiella subrossi* Laing, 1929; *Chrysomphalus niger* Laing, 1929; *Melanaspis subrossi* (Maskell 1892).

***Melanaspis bromiliae* (Leonardi 1899)** (Fig. 6D) (Fernald 1903; Lindinger 1932; Deitz & Davidson 1986)

(1) **Original spelling on label:** *Chrysomphalus bromeliae* Newst. (2 slides)

Distribution: Taiwan (Heito: Ropi near Heito).

(2) **Original spelling on label:** *Pseudischnaspis anassarum* Lindg. (3 slides)

Distribution: Micronesia (Caroline Isls.: Yap: Nif); Palau (Korror).

Host plant: *Ananas comosus*.

Syn.: *Aonidiella bromiliae* Leonardi, 1899; *Aspidiotus bromiliae* (Leonardi 1899); *Pseudischnaspis bromeliae* (Leonardi 1899); *Chrysomphalus* (*Melanaspis*) *bromeliae* Fernald, 1903.

***OctAspidiotus machili* (Takahashi 1931)** (Fig. 6E) (Takahashi 1931b; Takagi 1984; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aspidiotus machili* Takah. (1 slide)

Distribution: Taiwan (Taihoku: Sozan).

Host plant: *Machilus* sp..

Syn.: *Aspidiotus machili* Takahashi, 1931; *MetAspidiotus machili* (Takahashi 1931).

Note: Syntype, female [collected from Taiwan: Sozan, on *Machilus* sp., 21-VI-1931 by R. Takahashi (#17-2-2-4)].

***OctAspidiotus stauntoniae* (Takahashi 1933)** (Fig. 6F) (Takahashi 1933; Takagi 1984; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aspidiotus stauntoniae* Takah. (2 slides)

Distribution: Taiwan (Taihoku: Shinten).

Host plant: *Stauntonia obovatifolia*.

Syn.: *Aspidiotus stauntoniae* Takahashi, 1933; *MetAspidiotus stauntoniae* (Takahashi 1933).

Note: Syntypes, female [collected from Taiwan: Shinten, on *Stauntonia obovatifolia*, 16-X-1932 by R. Takahashi (#17-5-4-1–2)].

***PseudAonidia curculiginis* (Green 1904)** (Fig. 7A) (Green 1904; Marlatt 1908; Lindinger 1909; Williams & Miller 2007)

Original spelling on label: *Furcaspis curculiginis* Green. (1 slide)

Distribution: Malaysia (Malaya: Fanting Sqmpah).

Host plant: *Gardenia* sp..

Syn.: *Aspidiotus* (*PseudAonidia*) *curculiginis* Green, 1904; *PseudAonidia circuliginis* (Green); *Furcaspis curculiginis* (Green 1904); *StringAspidiotus curculiginis* (Green 1904); *Aspidiotus curculiginis* (Green 1904).

***PseudAonidia duplex* (Cockerell 1896)** (Fig. 7B)

(Cockerell 1896; Fernald 1903; Tao 1989; Wong *et al*. 1999)

Original spelling on label: *PseudAonidia duplex* Ckll. (8 slides)

Distribution: Japan (Honshu: Kobe; Wakayama); Taiwan (Taihoku; Takao; Toen: Heichin, Heitin).

Host plant: *Camellia sinensis*, *Cinnamomum camphora*, *Citrus* sp..

Syn.: *Aspidiotus theae* Maskell, 1891; *Aspidiotus duplex* Cockerell, 1896; *Aspidiotus* (*PseudAonidia*) *duplex* (Cockerell 1896); *Aspidiotus* (*PseudAonidia*) *theae* (Cockerell 1891); *Aspidiotus* (*EvAspidiotus*) *duplex* (Cockerell 1896); *Aspid-*

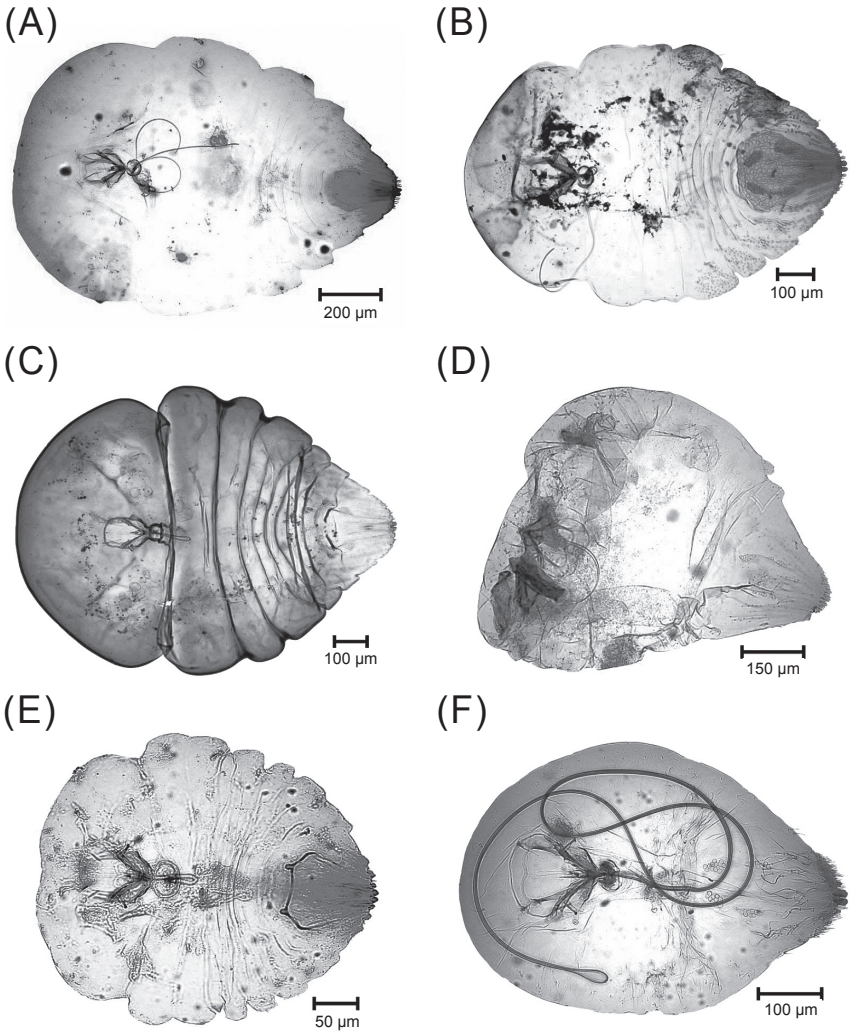

Fig. 7. (A) *Pseudaonidia curculiginis* (Green 1904); (B) *Pseudaonidia duplex* (Cockerell 1896); (C) *Pseudaonidia trilobitiformis* (Green 1896); (D) *Selenomphalus euryae* (Takahashi 1931); (E) *Semelaspidus mangiferae* (Takahashi 1939); and (F) *Taiwanaspidiotus shakunagi* (Takahashi 1935).

iotus (*EvAspidiotus*) *theae* (Cockerell 1891); *Aspidiotus theae rhododendri* Green, 1900; *PseudAonidia rhododendri* (Green 1900); *PseudAonidia rhododendri thearum* Fernald, 1903.

***PseudAonidia trilobitiformis* (Green 1896)** (Fig. 7C) (Green 1896a; Cockerell 1899a; Tao 1989; Wong et al. 1999)

Original spelling on label: *PseudAonidia trilobitiformis* Green. (25 slides)

Distribution: Cambodia (Angkor); Indonesia (Java); Taiwan (Bokoto: Mako; Heito: Garanbi; Kagi; Taichu: Kahodai; Taihoku: Sozan, Taihoku, Taipei; Taito: Kanaron, Kotosho); Thailand (Ubon).

Host plant: *Artocarkus* sp., *Bischoffia* sp., *Buxus microphylla*, *Calophyllum inophyllum*, *Citrus* sp., *Fhenacaspus* sp., *Ficus retusa*, *Ficus* sp., *Hydrangea* sp., *Machilus* sp., *Mangifera indica*, *Murraya exotica*, *Murraya paniculata*, *Quercus* sp., *Scolopia oldhamii*.

Syn.: *Aspidiotus trilobitiformis* Green, 1896; *Aspidiotus trilobitiformis* (Green 1896); *Aspidiotus darutyi* Charmoy, 1898; *Aspidiotus* (*EvAspidiotus*) *trilobitiformis* (Green 1896); *PseudAonidia trilobitiformis darutyi* (Green 1896); *PseudAonidia darutyi* (Charmoy 1898).

***Selenomphalus euryae* (Takahashi 1931)** (Fig. 7D) (Takahashi 1931b; Lindinger 1943; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Aspidiotus euryae* Takahashi, 1931 (4 slides)

Distribution: Taiwan (Giran: Taiheisan, Taihezan; Nantou: Suisha; Taichu: Rirei).

Host plant: *Eurya* sp..

Syn.: *Aspidiotus euryae* Takahashi, 1931; *Selenaspidus euryae* (Takahashi 1931).

Note: Syntype, female [collected from Taiwan: Taihezan, Suisha, on *Eurya* sp., 21-V-1921 by R. Takahashi (#17-2-1-3)].

***Semelaspidus mangiferae* Takahashi, 1939** (Fig. 7E) (Takahashi 1939; Tao 1989; Ben-Dov & Miller 2010)

Original spelling on label: *Semelaspidus mangiferae* Takah. (1 slide)

Distribution: Philippine.

Host plant: *Mangifera indica*.

Note: Syntype, female [collected from Philippines: on *Mangifera indica*, III-1933 by R. Takahashi (#20-5-4-1)].

***TaiwanAspidiotus shakunagi* (Takahashi 1935)** (Fig. 7F) (Takahashi 1935; Takagi 1969; Tao 1989)

Original spelling on label: *Aspidiotus shakunagi* Takah. (2 slides)

Distribution: Taiwan (Taito: Chipponsan).

Host plant: *Cerbera manghas*, *Rhododendron Bergian*.

Syn.: *Aspidiotus shakunagi* Takahashi, 1935.

Note: Syntypes [collected from Taiwan: Taito Province, Chipponsan, on *Rhododendron* sp., 23-III-1934 by R. Takahashi (#17-5-3-1–2)].

DISCUSSION

Based on the modern taxonomic system, the number of Aspidiotinae species collected and deposited at TARI Insect Collection is 42. The present paper could be a database to set up the online information of scientific name, synonyms, host plants, distribution and digital archives through Digital Insect of TARI website (http://digiins.tari.gov.tw/) which will meet of the requirements of both basic and applied works and will be helpful to taxonomic researchers, quarantine inspector inspections and farmers in the future.

ACKNOWLEDGMENTS

We gratefully acknowledge the financial support of the National Science Council of Taiwan (NSC 99-2631-H-055-001, and NSC 100-2631-H-055-001).

REFERENCES

Ben-Dov, Y. and D. Miller. 2013. ScaleNet: a database of the scale insects of the world. (http://www.sel.barc.usda.gov/scalenet/scalenet.htm).

Berlese, A. 1895. Le cocciniglie Italiane viventi sugli argumi. Parte III. I Diaspiti. (Cap. I. Note di sistematica e descrizione delle specie). Riv. Patol. Veg. 4:74–170. (in Italian)

Bodenheimer, F. S. 1949. The Coccidea of Turkey. Diaspididae. A Monographic Study. Guney, Ankara. 264 pp. (in Turkish)

Borchsenius, N. S. 1966. A catalogue of the armoured scale insects (Diaspidoidea) of the world. Nauka, Moscow & Leningrad. 449 pp. (in Russian)

Chamberlin, J. C. 1927. Status and synonymy of the dictyospermum scale. California Dept. Agric. Monthly Bull. 16:484–491.

Chou, I. 1985. Monograph of the Diaspididae of China. Vol. 2. Shanxi Publishing House of Science and Technology, Shanxi. 431pp. (in Chinese)

Chu, Y. I. and T. Yamanaka. 1973. A check list of the present and old name of insect collect localities in Taiwan. J. Taiwan Mus. 16:31–72.

Chu, Y. I. and T. Yamanaka. 1974. A check list of the present and old name of insect collect localities in Taiwan (continued). J. Taiwan Mus. 17:51–120.

Chu, Y. I. and T. Yamanaka. 1975. A check list of the present and old name of insect collect localities in Taiwan (continued). J. Taiwan Mus. 17:121–150.

Cockerell, T. D. A. 1893a. A list of West Indian Coccidae. J. Inst. Jamaica 1:252–256.

Cockerell, T. D. A. 1893b. West Indian Coccidae. Ent. Mon. Mag. 29:38–41, 80.

Cockerell, T. D. A. 1896. X. preliminary diagnoses of new Coccidae. Supplment 7:18–21.

Cockerell, T. D. A. 1899a. Article VII. First supplement to the check list of the Coccidae. Bull. Ill. Nat. Hist. Surv. 5:389–398.

Cockerell, T. D. A. 1899b. Rhynchota, Hemiptera–Homoptera. (Aleurodidae and Coccidae). Biologia Centrali-Americana 2:1–37.

Cockerell, T. D. A. 1905. Tables for the identification of Rocky Mountain Coccidae (Scale insects and mealybugs). Colorado Univ. Stud. 2:189–203.

Comstock, J. H. 1881. Report of the entomologist. U.S. Dept. Agric. Rep. 1880/1881:276–349.

Deitz, L. L. and J. A. Davidson. 1986. Synopsis of the armored scale genus *Melanaspis* in North America (Homoptera: Diaspididae). N.C. Agric. Res. Serv. Tech. Bull. 279:1–92

Fernald, M. E. 1903. A Catalogue of the Coccidae of the World. Press Carpenter & Morehouse. Amherst, Massachusetts. 360 pp.

Ferris, G. F. 1938. Atlas of the Scale Insects of North America, Series 2. Stanford Univ. Press, California. 132 pp.

Ferris, G. F. 1941. The genus *Aspidiotus* (Homoptera: Coccoidea: Diaspididae) (Contribution no. 28). Microentomology 6:33–69.

Green, E. E. 1896a. Catalogue of Coccidae collected in Ceylon. Indian Museum Notes 4:2–10.

Green, E. E. 1896b. The Coccidae of Ceylon. Part I. Dulau, London. 103 pp.

Green, E. E. 1904. On some Javanese Coccidae: With descriptions of new species. Entomol. Mon. Mag. 40:204–210.

Kuwana, S. I. 1932. Two new conifer–Infesting scale insects from Japan. Philipp. J. Sci. 48:51–54.

Leonardi, G. 1897. Monografia de genere *Aspidiotus* (nota preventiva). Riv. Patol. Veg. 5:283–286. (in Italian)

Leonardi, G. 1906. Diagnosi di coccinglie nuove (1905). Redia 3:1–7. (in Italian)

Lindinger, L. 1909. Beiträge zur Kenntnis der Schildläuse und ihrer Verbreitung. Zeitschrift für Wissenschaftliche Insektenbiologie 5:105–226. (in German)

Lindinger, L. 1914. Die Cocciden–Literatur des Jahres 1909. Zeitschrift für Wissenschaftliche Insektenbiologie 10:114–120. (in German)

Lindinger, L. 1932. Die Synonymie von Walkers Cocciden (Hem.). Mitteilungen der Deutschen Entomologischen Gesellschaft 3:26–27. (in German)

Lindinger, L. 1943. Verzeichnis der Schildlaus-Gattungen, 1. Nachtrag. (Homoptera: Coccoidea). Zeitschrift der Wiener Entomologischen Gesellschaft 28:205–208.

Linnaeus, C. 1758. Insecta Hemiptera–Coccus. Systema naturae. Vol. 1. Laurentii Salvii Holmiae Press, Stockholm. 823 pp.

MacGillivray, A. D. 1921. The Coccidae. Scarab Press, Illinois. 502 pp.

Marlatt, C. L. 1908. The genus *PseudAonidia*. Proc. Entomol. Soc. Wash. 9:131–141.

Maskell, W. M. 1879. On some Coccidae in New Zealand. Trans. Proc. N. Z. Inst. 11:187–228.

Maskell, W. M. 1891. Further coccid notes: With descriptions of new species from New Zealand, Australia, and Fiji. Trans. Proc. N. Z. Inst. 23:1–36.

Maskell, W. M. 1892. Further coccid notes: With descriptions of new species, and remarks on coccids from New Zealand, Australia and elsewhere. Trans. Proc.

N. Z. Inst. 24:1–64.

Maskell, W. M. 1895. Further coccid notes: With description of new species from New Zealand, Australia, Sandwich Islands, and elsewhere, and remarks upon many species already reported. Trans. Proc. N. Z. Inst. 27:36–75.

McKenzie, H. L. 1938. The genus *Aonidiella* (Homoptera: Coccoidea: Diaspididae). (Contribution number 8). Microentomology 3:1–36.

McKenzie, H. L. 1939. A revision of the genus *Chrysomphalus* and supplementary notes on the genus *Aonidiella* (Homoptera: Coccoidea: Diaspididae). Microentomology 4:51–77.

Morgan, A. C. F. 1889. Observations on Coccidae (No. 5). Entomol. Mon. Mag. 25:349–353.

Newstead, R. 1894. Scale insects in Madras. Indian Museum Notes 3:21–32.

Sanders, J. G. 1909. Catalogue of recently described Coccidae–II. U. S. D. A. Bur. Ent. Tech. Ser. 16:33–60.

Takagi, S. 1969. Diaspididae of Taiwan based on material collected in connection with the Japan-U.S. Co-Operative science programme, 1965 (Homoptera: Coccoidea). Part I. Insecta Matsumurana 32:1–110.

Takagi, S. 1974. An approach to the *Hemiberlesia* problem (Homoptera: Coccoidea). Insecta Matsumurana 3:1–33.

Takagi, S. 1984. Some aspidiotine scale insects with enlarged setae on the pygidial lobes (Homoptera: Coccoidea: Diaspididae). Insecta Matsumurana 28:1–69.

Takahashi, R. 1931a. Descriptions of some new Formosan Coccidae. (Rhynchota). Bull. Entomol. Res. 22:211–220.

Takahashi, R. 1931b. Records and descriptions of the Coccidae from Formosa, Part I. J. Soc. Tropical Agric. 3:377–385.

Takahashi, R. 1931c. Some Coccidae of Formosa. Trans. Nat. Hist. Soc. Formosa 21:1–5.

Takahashi, R. 1933. Observations on the Coccidae of Formosa, III. Formosa Govt. Res. Inst. Dept. Agri. Rept. 60:1–64.

Takahashi, R. 1934. Observations on the Coccidae of Formosa, Part IV. Formosa Govt. Res. Inst. Dept. Agric. Rept. 63:1–38.

Takahashi, R. 1935. Observations on the Coccidae of Formosa, V. Formosa Govt. Res. Inst. Dept. Agri. Rept. 66:1–37.

Takahashi, R. 1936. Two interesting scale insects attacking the Lauraceae in Formosa (Hemiptera). Trans. Nat. Hist. Soc. Formosa 26:80–83.

Takahashi, R. 1938. Two Parlatoriini from India (Coccidea, Hemiptera). Proc. R. Ent. Soc. Lond. Ser. B Taxon. 7:271–272.

Takahashi, R. 1939. Two new diaspine Coccidae from India and the Philippines (Hemiptera). Tenthredo 2:339–343.

Takahashi, R. 1942. Some injurious insects of agricultural plants and forest trees in Thailand and Indo-China. II. Coccidae. Report. Formosa Govt. Res. Inst. Dept. Agric. Rept. 81:1–56.

Takahashi, R. and S. Takagi. 1957. A new genus of Diaspididae from Japan (Homoptera: Coccoidea). Kontyu 25:102–105.

Tao, C. C. C. 1978. Check list and host plant Index to scale insects of Taiwan, Republic of China. J. Agric. Res. China. 27:77–141. (in Chinese with English abstract)

Tao, C. C. C. 1989. Scale insects name list of Taiwan, Republic of China. Bull. Taichung Dist. Agric. Improv. Sta. 22:57–70. (in Chinese with English abstract)

Williams, D. J. and D. R. Miller. 2007. String *Aspidiotus* MacGillivray (Hemiptera: Coccoidea: Diaspididae) a new synonym of *PseudAonidia* Cockerell, with a redescription of the type species. Proc. Entomol. Soc. Wash. 109:773–778.

Williams, D. J. and G. W. Watson. 1988. The Scale Insects of the Tropical South Pacific Region. Part 1. The Armoured Scales (Diaspididae). CAB International, London. 290 pp.

Wong, C. Y., S. P. Chen, and L. Y. Chou. 1999. Guidebook to Scale Insects of Taiwan. Taiwan Agric. Res. Inst, Taichung. 98 pp. (in Chinese)

農業試驗所昆蟲標本館圓盾介殼蟲亞科 (半翅目、胸喙亞目、介殼蟲總科、盾介殼蟲科) 標本名錄

陳淑佩 [1,*] 翁振宇 [2] 吳文哲 [3,4]

摘要

陳淑佩、翁振宇、吳文哲。2013。農業試驗所昆蟲標本館圓盾介殼蟲亞科 (半翅目、 胸喙亞目、介殼蟲總科、盾介殼蟲科) 標本名錄。台灣農業研究 62(4):300–320。

本文羅列 23 屬 42 種 (391 片玻片標本) 之農業試驗所館藏之圓盾介殼蟲亞科 [半翅目 (Hemiptera) 胸喙亞目 (Sternorrhyncha) 介殼蟲總科 (Coccoidea) 盾介殼蟲科 (Diaspididae)] 名錄，其中亦包含異名、寄主植物、採集分佈及標本形態圖等資料。

關鍵詞：盾介殼蟲、農業試驗所、館藏標本。

投稿日期：2013 年 7 月 29 日；接受日期：2013 年 9 月 18 日。
* 通訊作者：spchen@tari.gov.tw
[1] 農委會農業試驗所應用動物組副研究員。台灣 台中市。
[2] 農委會農業試驗所應用動物組技工。台灣 台中市。
[3] 國立台灣大學昆蟲學系教授。台灣 台北市。
[4] 國立台灣大學生物資源暨農學院植物醫學研究中心主任。台灣 台北市。